

**Villarreal, Chris**

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**From:** Rauscher, Jon  
**Sent:** Tuesday, September 23, 2014 3:34 PM  
**To:** Tzhone, Stephen  
**Cc:** Villarreal, Chris; Khoury, Ghassan; Becher, Kent  
**Subject:** RE: Arkwood CSM

Stephen,

I do not have any additional comments to the draft consolidated comments.

I think that the soil sampling that has been proposed will help elucidate the protectiveness issue of the current 6" cover. The soil sampling will provide you with a representative concentration of the dioxin compounds in the current 6" cover.

Groundwater and surface water potentially bypassing New Cricket Spring treatment plant can be an issue for both pentachlorophenol and the dioxin compounds. If bypass is occurring, the conceptual site model will need to account for this potential exposure. As current draft comments state, the proposed dye study probably not determine if bypass is occurring.

Thanks, Jon

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**From:** Tzhone, Stephen  
**Sent:** Monday, September 22, 2014 11:16 AM  
**To:** Khoury, Ghassan; Rauscher, Jon; Berg, Marlene; Crumbling, Deana; Bartenfelder, David; Poore, Christine  
**Cc:** Sanchez, Carlos; Meyer, John; Villarreal, Chris  
**Subject:** RE: Arkwood CSM

Ghassan: Thanks for the final CSM review and your comment on 6" cover is noted. Currently, no protectiveness decision has been made on the cover yet... however, that decision can be made after we conduct the soil sampling and consider the results. Thoughts on this issue are below.

Also, attached for everyone is the current draft comments grid. For those who haven't sent in their final CSM comments or thumbs up, please do so, thanks.

Thanks,

Stephen L. Tzhone  
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**From:** Khoury, Ghassan  
**Sent:** Friday, September 19, 2014 4:08 PM  
**To:** Tzhone, Stephen  
**Cc:** Rauscher, Jon  
**Subject:** Arkwood

Hi Stephen,



9557049

I reviewed the CSM, it looks better. I have only one issue which is the future land use as industrial and deed restriction applied to the land. A cap of 6" of sodded soil does not seem to be protective for an industrial use. Although the deed restriction prevents any disturbance of the surface soil, but if any one wants to put an industrial complex in that area they have to dig for utilities (electrical, gas, water and sewer) lines. Do you know if the deed restriction allows digging but require dug out soil to be properly collected and disposed off? Sorry I am just uncomfortable with this issue. But at the end it is your decision as it is a management decision i.e. whether 6" cover is considered adequate or not.

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**From:** Berg, Marlene  
**Sent:** Wednesday, September 10, 2014 5:30 PM  
**To:** Tzhone, Stephen  
**Cc:** Bartenfelder, David  
**Subject:** RE: Arkwood - Dioxin Reassessment - CSM and Supplemental Tracing Study Work Plan

Steve,

Yes, for your first point, the cover would be protective for direct contact if the soil cover does not exceed the soil cleanup level. Secondly, ICs would need to be in place to prevent direct contact to soil below the cover that may exceed the soil cleanup level and also to maintain the cover in perpetuity.

With respect to the cover being protective for possible migration to ground water, I will defer this issue to Dave Bartenfelder, our ground water expert.

Marlene

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**From:** Tzhone, Stephen  
**Sent:** Wednesday, September 10, 2014 3:03 PM  
**To:** Berg, Marlene; Khoury, Ghassan; Rauscher, Jon  
**Cc:** Poore, Christine; Sanchez, Carlos; Villarreal, Chris; Meyer, John  
**Subject:** RE: Arkwood - Dioxin Reassessment - CSM and Supplemental Tracing Study Work Plan

Hi Marlene,

“Have they determined that the cover is protective for all potential exposure pathways, e.g. migration to ground water?”

From your question (highlighted), I don't believe anyone has made that protectiveness determination yet. But I am assuming the answer can be yes, if:

- samples from the cover comes back with results less than the new industrial soil PRG; and,
- the dye tracing test verifies no other sources of off-site transport.

Let me know if HQ has a different interpretation on the cover remedy component, I based my assumption and rationale on the upcoming actions documented on the CSM response grid. I've also forwarded your question to the risk assessors as they complete their review.

#5:

Infiltration of storm water through the cap or the base of the ditches will potentially mobilize residual	The 1991 dye tracer studies demonstrated that New Cricket Spring was the only credible
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contamination in the sink hole. Based on current flow data, the amount of infiltration occurring between the sink hole and New Cricket Spring may be negligible, but in wetter years that may not be true. Either colloidal transport or dissolution or both may be occurring and either may be the primary mechanism for dioxin movement in groundwater at this site. New technology is available to better assess this movement and the concentration reaching offsite wells or springs, and different standards now apply. The groundwater transport pathway should be considered complete, and additional decision unit(s) should be added to assess impacts to off-site receptors.	source of off-site transport of PCDD/Fs (please see responses to the Supplemental Groundwater Tracing Study Work Plan). However, the CSM will be modified to identify this pathway as complete for trespasser scenarios. Relevant ditch PCDD/F samples from 2012 investigations between the water treatment plant and the associated retention pond are well below the 730 ppt RSL, demonstrating compliance under the dioxin reassessment that triggered this re-evaluation. In addition, the open ditch sections adjacent to the roadway (limited to approximately 10 feet near the treatment system discharge and about 5 feet immediately before and after the discharge crosses beneath the Old Cricket Road) will be converted to a solid, covered culvert. Fencing will be installed around the detention pond property to limit access to this area. A deed restriction will be recorded to restrict the property to non-residential use.
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#9:

<p>This paragraph says “<i>All of the proposed samples will be surface soil samples collected from 0-2 inches in depth.</i>”</p> <p>However, the remedy described in the ROD calls for the entire site to be covered with 6 to 12 inches of clean topsoil.</p> <p>Thus, the proposed samples should be collected from a minimum of 0-6 inches in depth.</p>	McKesson will agree to perform all IC sampling site-wide using cores from 0-6 inches in depth.
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**From:** Berg, Marlene  
**Sent:** Thursday, September 04, 2014 9:19 AM  
**To:** Tzhone, Stephen  
**Cc:** Poore, Christine  
**Subject:** FW: Arkwood - Dioxin Reassessment - CSM and Supplemental Tracing Study Work Plan  
**Importance:** High

Steve,  
As Christine Poore, the Region 6 Coordinator, is now back from a detail, would you include her in your cc list?

And, while I will defer to Deana regarding sampling-related responses, I have a comment regarding item #2.

As stated, deed restrictions are in place to prevent contact with contamination which may be under the soil cover. Have they determined that the cover is protective for all potential exposure pathways, e.g. migration to ground water?

<p>The Record of Decision (ROD) originally set the dioxin clean-up level at 20,000 ppt, and it required 6-12 inches of clean soil as a cover. Data in Table 1 of the Revised CSM indicate there are many areas where dioxin concentrations in soil under the cover exceed the new screening level of 730 ppt.</p> <p>However, EPA understands that many of the additional samples identified in the Revised CSM are to be collected from the cover soil, not from the native soil below it. Therefore, concerns about the level of heterogeneity in the soil to be tested may or may not be applicable at this point, but they are presented below for informational purposes.</p>	<p>McKesson acknowledges that native soils beneath the cap may exceed 730 ppt TEQ. The clean soil cap and vegetative cover approved as the ROD remedy for the Arkwood Inc. Site remains in place as an effective barrier to prevent contact with such soils. Deed restrictions are in place to prevent future uses that would disturb the integrity of the ROD remedy. Thus, heterogeneity of soil PCDD/F concentrations beneath the vegetated cap are not relevant to determining compliance of the Site with the updated dioxin screening level.</p>
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